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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Hollow drill steels for rock drilling
(English Translation)**

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1 Scope

This Document specifies the classification and code, ordering details, manufacturing process, technical requirements, test methods, inspection rules, packaging, marking, and quality certificate for hexagonal and round hollow steel used in rock drilling rods.

This Document applies to hexagonal and round hollow steel (hereinafter referred to as "hollow steel") used in rock drilling rods.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the undated documents, only the latest version (including all the amendments) is applicable to this Document.

GB/T 222 Permissible tolerances for chemical composition of steel products

GB/T 223.11 Iron, Steel and Alloys - Determination of Chromium Content - Titrimetric and Spectrophotometric Methods (GB/T 223.11-2025, ISO 4937.2024, MOD)

GB/T 223.14 Methods for chemical analysis of iron, steel and alloy - The N-benzoyl-N-phenylhydroxylamine extraction photometric method for the determination of vanadium content

GB/T 223.23 Iron, steel and alloy - Determination of nickel content - The dimethylglyoxime

spectrophotometric method

GB/T 223.25 Methods for chemical analysis of iron, steel and alloy - The dimethylglyoxime gravimetric method for the determination of nickel content

GB/T 223.26 Iron, steel and alloy - Determination of molybdenum content - The thiocyanate spectrophotometric method

GB/T 223.53 Methods for chemical analysis of iron, steel and alloy - The flame atomic absorption spectrophotometric method for the determination of copper content

GB/T 223.60 Iron, steel and alloy - Determination of silicon content - Gravimetric method (GB/T 223.60-2024, ISO 439.2020, MOD) technical standards of metallurgy

YB/T 5293 Metallic materials - Test method for upsetting

3 Terms and Definitions

For the purposes of this Document, the following terms and definitions apply.

3.1 Hollow drill steels

Hollow steel profiles with a round, hexagonal, or other shaped cross-section and a central hole.

NOTE: Hollow steel is a raw material used to make drill rods.

4 Classification and Code

4.1

Hollow steel is classified into hexagonal and round shapes according to its shape.

4.2

Main specifications and codes are shown in Table 1.

4.3

Other specifications of hollow steels may also be provided upon negotiation between the supplier and the purchaser, and as specified in the contract.

Table 1 - Specifications and codes Unit. mm

Specifications and codes

5 Ordering Details

The order contract or order shall include at least the following.

a) This Document number;

- b) Product name;
- c) Designation;
- d) Controlled residual elements (if required);
- e) Weight (or quantity) of the delivered product;
- f) Specification code and dimensional tolerance level;
- g) The used processing method (if required);
- h) Length;
- i) Other special requirements.

6 Manufacturing Process

6.1

The billet used for producing hollow steel shall be vacuum degassed.

6.2

Hollow steel core holes may be machined by drilling, piercing, and punching.

6.3

Hollow steel is usually delivered in hot-rolled condition; but may also be delivered in heat-treated condition (annealed, normalized, or high-temperature tempered) condition upon the purchaser's request and specified in the contract.

6.4

Hollow steel shall not exhibit overheated or burnt structures.

6.5

The inner lining tube of hollow steel shall not be loose or fall off.

7.1.1 Dimensions and permissible deviations

purchaser and specified in the contract.

7.1.2 Length

7.1.2.1

The length of hollow steel is 6000 mm to 7000 mm.

7.1.2.2

Hollow steel can be delivered in other sizes upon negotiation by both the supplier and the purchaser and specified in the contract.

7.1.2.3

When delivering in fixed or multiple lengths, the permissible deviation of the total length is +60 0 mm.

7.1.3 Shape

7.1.3.1

Core holes are not allowed to have sharp corners or obvious deformities with a radius less than 0.5 mm.

7.1.3.2

The curvature per meter of hollow steel shall not exceed 2 mm; and the total curvature shall not exceed 0.2% of the total length.

7.1.3.3

The ends of hollow steel shall be straight.

7.1.3.4

The out-of-roundness of round hollow steel shall not exceed 0.5 times the tolerance of the outer diameter.

7.1.3.5

The difference in distance between any two opposite sides on the same cross section of hexagonal steel shall not exceed 0.5 times the tolerance of the opposite sides.

7.1.3.6

Hexagonal hollow steel shall be free from twisting and end turnaround.

7.2 Designations and chemical compositions

7.2.1

The designations and chemical compositions (smelting analysis) of hollow steel shall conform to the provisions of Table 4.

7.2.2

The permissible deviation of the chemical compositions of finished hollow steel shall conform to the provisions of GB/T 222.

7.2.3

Other designations of hollow steel may be provided upon negotiation between the supplier and the purchaser and as specified in the contract.

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